

UNIT PROJECT

Model Medicine

PRODUCT: model molecule

SUBJECT: molecule used to treat an illness

Research and Take Notes

- **Look for a molecule.** Identify several medicines and the illness each is used to treat. Be sure to get the compound name, not the brand name. On the Internet, use the compound's name and key words such as "chemical structure," "molecular structure," "compound structure," or "chemical formula" to find the structure of the molecule. You might use a *Physician's Desk Reference* or another pharmaceutical reference book if a computer is not available. Have several choices of medicines should you be unable to identify a structure.
- **Take notes.** Once you've identified the molecule, write down its exact name and chemical formula. Carefully sketch its structure. Identify the illnesses the medicine is used to treat. If possible, identify what it is about the molecule that allows it to treat this illness. (Does it bind to nerve receptors? Does it block the action of another molecule?) Note carefully the sources you use.

Develop Your Model

- **Identify each part.** Consider the atoms in the molecule. Use a periodic table to help you identify the elements represented by unfamiliar symbols. Know how many different atoms are in your molecule as well as the total number of atoms in your molecule.
- **Consider the constraints.** Figure out what materials you need to build your model. Use objects that are soft enough to stick together but strong enough to remain intact. Decide how large and how heavy your model will be. You do not need to make each atom precisely to scale, but be sure to consider sizes of atoms of different elements. You might use foam balls, gumdrops, and clay for atoms; and toothpicks, straws, or pipe cleaners for bonds.
- **Plan your design.** Before you build your model, decide how each atom will be represented. Be sure to gather enough of the needed materials.

Build the Model

- **Build the molecule.** Build the molecule using your materials.
- **Compare the molecule.** Compare your model to your earlier sketch of the molecule. Does it look the same? Modify the model to account for any differences.
- **Write a molecule fact sheet.** Indicate what medicine your molecule represents and what illness it is used to treat. Describe the materials that went into constructing your model and any difficulties that arose while you were building it.
- **Present your model.** Present your model to the class. If possible, make copies of your fact sheet to share with everyone.

EVALUATION RUBRIC: MODEL MEDICINE				
Molecule Fact Sheet	Completely	Mostly	Partially	Poorly
Identifies a medicine and the disease it is used to treat	5	4	3–2	1
Correctly identifies the chemical formula and molecular structure	5	4	3–2	1
Materials				
Material used to represent atoms appropriate	5	4	3–2	1
Material used to represent bonds appropriate	5	4	3–2	1
Model Design				
Atoms of different elements easily distinguishable from one another	5	4	3–2	1
Bond angles appropriate	5	4	3–2	1
Model stays together	5	4	3–2	1
Presentation				
Describes the process of making the model	5	4	3–2	1
Speaks clearly	5	4	3–2	1
Use of Class Time				
Efficient and productive	5	4	3–2	1
“Special Something” extra credit				
Report has some outstanding aspect	5			
Subtotal:				

Total _____ = _____ %
50